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One of the chief objects to be attained by the systematic treatment of physical geography by the state surveys is educational. It is in every way desirable to disseminate accurate information among the people, and to have the information in such form that it will stimulate independent study. Another object is to furnish professional geographers with accurate knowledge of the region studied. Mr. Marbut's report must be looked upon as more successful from the standpoint of geographers, than from the standpoint of those who are not. Judged from the standpoint of the reader who is not posted in the principles and nomenclature of modern geography, the report is in danger of seeming unnecessarily technical and so of not being understood. This danger is enhanced by the fact that it occasionally lacks in clearness, both because the language is obscure, and because of the lack, at some points, of adequate illustration. Another defect in the same line appears in the frequent references to places which no accompanying map locates. From the standpoint of the geographer these defects may not be serious, but from the standpoint of the citizen who is not a geographer, it is to be feared that they will too often cause the report to remain unread. It goes without saying that it is much easier to point out these shortcomings than to remedy them.

A question is here raised, by way of suggestion, rather than of criticism, concerning one of the statements of the report. On page 76 it is said that the upper Mississippi probably assumed its present location in late Cretaceous time. There is some reason, though at present by no means conclusive, for suspecting that the present location of this stream was selected at a much later date, possibly as late as the Tertiary.¹ If it shall prove to be true that the isolated remnants of preglacial gravels, occurring at high levels at various points in the Mississippi basin are Tertiary, the development of the present physiographic features of the Mississippi basin, including the valley of the master stream, must date from a still later time. R. D. S.

Geologic Atlas of the United States. Folio 18, Smartsville, California, 1895.

This folio consists of four pages of text, signed by Waldemar Lindgren and H. W. Turner, geologists, and G. F. Becker, geologist in charge; a topographic sheet (scale 1:125,000), a sheet of areal geology, one of economic geology, and one of structure sections.

Topography.—The district of country represented lies between the

meridians 120° and $121^{\circ} 30'$ and the parallels 39° and $39^{\circ} 30'$, and embraces about 925 square miles, comprising a part of the foothill region of the Sierra Nevada. The elevation ranges from 50 feet above sea level in the northwestern corner to over 4000 feet in the northeastern corner. The topography is characterized by a number of parallel ridges, running in a north-northwest direction. The northeastern part has more the character of an irregular and undulating table-land. Through the ridges and the plateaus the watercourses have cut deep and narrow canyons. The Yuba River, with its branches, drains the larger part of the district. Honcut Creek on the north and Bear River on the south, are the only other streams of importance.

Geology.—Sedimentary formations occupy comparatively few areas in the district, all of which has been tentatively referred to the Calaveras formation, no fossils having been found in them. They consist of slates and quartzitic sandstones, usually with northerly strike and steep easterly dip. Diabase and porphyrite occupy large areas in the central and southern parts, as well as intrusive masses of granodiorite and gabbrodiorite. Amphibolites, resulting from the dynamo-metamorphism of diabase, gabbro, and diorite, also occur in several places. The rocks of the district are principally massive, in contrast to those of the districts adjoining on the south and east. However, two lines traverse it along which extensive metamorphism has taken place and schistose rocks have been developed. The superjacent rocks, resting unconformably on the older series, consist of Neocene river gravels together with beds of andesitic and rhyolitic tuffs. Comparatively small areas of these remain, the larger part having been carried away by erosion. Pleistocene shore gravels and alluvium occupy the southwestern corner. The Ione formation is not well exposed in this district, being in part covered by Pleistocene deposits, in part removed by erosion.

Economic Geology.—Important and rich Neocene gravel deposits in this district have been worked at Camptonville, Nevada City, North San Juan, Badger Hill, French Corral, and Smartsville. Gold-quartz veins occur scattered throughout the area, but by far the most of them are found in the immediate vicinity of Nevada City and Grass Valley. These districts are among the most important of the gold-mining regions in California. Many of the rocks of the district are adapted for building purposes. The only one in extensive use is the granodiorite near Nevada City. The often deep red soils in the foothill region are of

residuary origin. Extensive areas of alluvial and sedimentary soils are found only in the southwestern corner.

Sixteenth Annual Report, U. S. Geol. Survey, CHARLES D. WALCOTT, Director. Washington, 1896.

The report is issued in four volumes of which the first embraces the administrative reports and all papers of a theoretic nature. Among the latter are : "The Dinosaurs of North America," by O. C. Marsh ; "Glacier Bay and its Glaciers," by H. F. Reid ; "Some Analogies in the Lower Cretaceous of Europe and America," by L. F. Ward ; "Structural Details in the Green Mountain Region in Eastern New York," by T. N. Dale ; "Principles of North American Pre-Cambrian Geology," by C. R. Van Hise ; "Summary of the Primary Triangulation Executed Between 1882 and 1894," by Henry Gannett. In part second, made up of papers of an economic character, are, among others, "Reports upon Cripple Creek," by Cross and Penrose, "A Reconnoissance across Idaho," by G. H. Eldridge, "A Report upon the Mercur Mining District," by J. E. Spurr, and a paper upon "The Public Lands and their Water Supply," by F. H. Newell. Parts three and four contain the matter formerly published separately in the series of volumes known as *Mineral Resources*.

Additional reviews and abstracts crowded out of this number will appear in the following issue.